(19) World Intellectual Property Organization International Bureau





(43) International Publication Date 1 September 2005 (01.09.2005)

(10) International Publication Number . WO 2005/080606 A1

(51) International Patent Classification7: C12M 1/36, C07H 21/04, C12P 19/34 C12Q 1/68,

(21) International Application Number:

PCT/US2005/005389

(22) International Filing Date: 18 February 2005 (18.02.2005)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data: 60/545,435

18 February 2004 (18.02.2004)

(71) Applicants and

(72) Inventors: ZHOU, Xiaochuan [CN/US]; 2212B Bellefontaine Street, Houston, TX 77030 (US). GAO, Xiaolian [US/US]; 2212B Bellefontaine Street, Houston, TX 77030 (US). GULARI, Erdogan [US/US]; 3886 Penberton Dr., Ann Arbor, MI 48105 (US).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG. ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

- with international search report
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: FLUIDIC DEVICES AND METHODS FOR MULTIPLEX CHEMICAL AND BIOCHEMICAL REACTIONS

(57) Abstract: The present invention describes microfluidic devices that provide novel fluidic structures to facilitate the separation of fluids into isolated, pico-liter sized compartments for performing multiplexing chemical and biological reactions. Applications of the novel devices including biomolecule synthesis, polynucleotide amplification, and binding assays are also disclosed.